BUILDING THEIR FUTURE II:

HIGH SCHOOL GIRLS IN TECHNOLOGY RELATED EDUCATION IN CONNECTICUT

EXECUTIVE SUMMARY

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PREFACE: SCHOOL-TO-WORK TRANSITION

In recent years, educators and political leaders have become increasingly concerned with the lack of connection between schools and the world of work. With the high school drop-out rate growing and many high school graduates not finding jobs or not seeking a college education, young people are not prepared for jobs which provide a growing income.

This lack of training is particularly important for women, since they are still heavily concentrated in low paying jobs. Women earned 71 cents for every dollar earned by men and made up 73 percent of all people over 18 years of age whose incomes were below poverty level in 1991. (*Source: Bureau of Labor Statistics*) At the same time, more women are working outside the home and a growing percentage of women are the sole support for their families.

Therefore, efforts to improve training are crucial for female students, particularly those who do not plan to go to college. The School-to-Work Opportunities Act authorizes grants for educators, employers, and labor representatives to develop partnerships to allow high school juniors and seniors to go to school part-time and to work part time. Students will receive high school diplomas, post-secondary training, and certificates of competency in their chosen fields.

Legislation passed in Connecticut sets up a system to integrate school and work-based learning. The system would provide a number of different pathways and its focus would be a new Connecticut Career Certificate. Each pathway consists of school-based and work based opportunities, supported by career development and other connecting activities.

In order to improve the links between learning and jobs, teachers have to provide information about careers in the classroom and guidance counselors need to discuss available options with students beyond the goal of going to a four year college. There must be a link between the choice of vocational electives and career goals.

However, an examination of the system of vocational education currently being offered in Connecticut's schools demonstrates how far we have to go to achieve these goals. Beyond the issue of linking vocational and academic education, however, is the problem of gender equity. While both boys and girls in our high schools suffer from the lack of connection between school and work, girls are losing the chance for high wage technological careers because of their low participation rates in technology education classes.

Any program to prepare young people for good jobs must also address the imbalance in the participation rate of females and women in technical training and provide opportunities and encouragement for females to consider nontraditional careers. This stage of our research project analyzes the factors which encourage and discourage female participation on technology education in high school and suggests strategies to move toward gender equity.

I. INTRODUCTION

In the first part of this research project, we examined the participation of girls in technology education, concentrating on their middle school experiences which was their first exposure to the subject. We also began a preliminary examination of why so few girls follow up that initial exposure by electing to take technology education in high school. (See *Building Their Future I)*

In this report, we follow up that research by interviewing high school students to determine why, from the student's perspective, there is such a wide gender gap in participation rates in technology education. *Building Their Future I* highlighted a survey of high school students in technology education which examined the factors influencing students' choice and the differences between boys and girls. In order to explore the reasons why some students chose not to take technology education, however, we needed to talk to high school students and let them express their thoughts and feelings directly. We, therefore, decided to make the major emphasis of this stage of the research a series of focus group interviews with high school students.

We interviewed both boys and girls, some of whom were taking technology education and some who were not. This strategy enabled us to look at the factors encouraging or discouraging students from choosing technology education as an elective, and in particular to examine the differences between boys and girls which could account for the huge difference in participation

We asked students what they liked and disliked about various subjects, particularly technology education, and how they decided what electives to take. We were interested in whether boys and girls chose to take technology education for different reasons and the important influences on their choices. We wanted to assess the impact of teachers and guidance counselors on their decisions, as well as parents and other factors outside of school.

II. METHODOLOGY

In order to gain information on the status of students in technology education, we visited four high schools across the state. We chose a range of different schools, including one suburban, one rural, one urban, and one school in a medium sized industrial town.

We picked two technology education classes in each high school, usually drafting or graphic arts, and two academic classes, mainly English or social studies. We conducted focus group interviews with the boys and girls separately, typically in groups of 8 or 9 students. We conducted a total of 32 interviews with 241 students, including 134 boys and 107 girls. In addition, we gave students a quiz about economic realities facing women in the work force. A total of 516 students in both academic and technology education classes took the quiz including 320 boys and 196 girls. (See Appendix A for quiz).

We asked students about their career plans and then went on to discuss their favorite subjects, their experiences in technology education, and their feelings about gender issues. We finished by asking each

individual with whom they talked to about the future and their relationships with parents, guidance counselors, and teachers (See Appendix C for interview protocol).

III. SUMMARY OF FINDINGS

We explored the reasons why some students decide to take technology education and some do not, with particular attention to the differences between boys and girls. While both boys and girls are attracted to technology education for many of the same reasons, we found significant differences among girls who do not take technology education.

Why Do Some Students Decide To Take Technology Education?

- Both boys and girls are attracted to technology education because they enjoy working with their hands and like the independence and chance for creativity provided by these classes.

- An interest in technology education was often encouraged by relatives or friends outside of school. This kind of encouragement was particularly important for girls, because boys are more likely to have experience with technology.

- Girls taking technology education shared a sense of being "pathbreakers" who could prove that girls were as good as boys at nontraditional subjects. They didn't mind being one of the few girls in a class and did not feel the boys made it difficult for them, although they did worry about the teachers treating them differently.

- Girls taking technology education rejected stereotypes about appropriate subjects or jobs for women, but discussions with boys and girls who do not take technology education revealed that stereotypes are still powerful. While boys and girls reject the ideas that males are inherently better at some subjects or jobs, the fact that there are few females in nontraditional occupations was often cited as a reason for girls not to take technology education or consider a technological career.

- Interest in a technological career was not an important factor in many students' decisions about vocational electives, although girls taking technology education seemed to have a clearer sense of career goals than boys.

- While some students were encouraged to take technology education as a result of their middle school experience, the most common response was that it had little impact because what they did in middle school was not comparable to the range of classes available in high school. As a result, girls were generally not aware of what was available in high school and were not being encouraged by their middle school experience to challenge stereotypes about appropriate subjects for girls. Many students reported getting little advice or information about technology education from their guidance counselors. This lack of information was particularly difficult for girls to overcome since they are less likely to have experience with technology outside of school and must be willing to fight stereotypes about appropriate subjects for girls. When guidance counselors did play an active role, some girls reported that they were discouraged from taking technology education.

Why Do Some Students Decide Not To Take Technology Education?

- Girls who choose not to take technology education were often reluctant to take classes where they would be one of the few girls. While only a few girls openly accepted stereotypes about appropriate careers for women, many of the girls felt uncomfortable with the picture of themselves in nontraditional jobs. They lacked confidence in their abilities and worried about the reaction of friends and family.

- Many students lack knowledge of what technological careers are available and what they involve. This lack of knowledge is an important factor for girls, since they have less experience with technology outside of school. Better information could have broken down stereotypes about "male occupations" and fears about the physical demands of jobs, since high tech areas like computer aided design and manufacturing do not involve heavy lifting or high risk injury.

- Many students lack a sense of economic realities which could inform them their choice of careers and help them make reasonable plans for further education and training after high school. Girls seemed unaware of salary or promotion prospects of traditional careers for women and seemed less concerned with economic realties than boys.

- The quiz results demonstrate that boys and girls have misconceptions about how long women are likely to spend working, the level of earnings they can expect, and the relative salaries of traditional jobs for women.

- Students often failed to make the connection between what they were doing in class and technological careers and breaking down stereotypes.

IV. CONCLUSIONS

Looking at the factors which discouraged both boys and girls from taking technology education, we found that many of these factors had a particularly strong impact on girls. Most of the girls we interviewed had never seriously considered taking technology education in high school. In addition to the difficulty of challenging stereotypes, the evidence of peer pressure and sexism among middle school students, which we documented in *Building Their Future I*, had already done its damage by discouraging most girls from considering nontraditional options by the time they reached high school.

The fact that most girls could not picture themselves in technological jobs reflects the barriers set by sexism and the failure of schools to provide role models and positive programs to overcome stereotypes. If we look only at the interviews with girls taking technology education, we might conclude that everything is fine and girls are doing well. However, the real picture is revealed in the enrollment numbers, which are reinforced by our interviews with girls not taking technology education. As long as

participation is limited to a few girls willing to be "pathbreakers", the critical mass needed to convince the majority of girls that technology education is really for them, will not be reached.

IV. RECOMMENDATIONS

Strategies designed to attract a sufficient number of girls to technology education in order to reach a critical mass will need to attack the problem from as many different directions as possible. Action needs to be taken not just by technology education teachers, but in cooperation with administrators, guidance counselors, and parents.

Because stereotypes about appropriate subjects or careers for women are still powerful, schools need to provide better information to all students about the options for technology careers and the role women can and do play in such occupations. Teachers and guidance counselors need to help students make the connection between what they are doing in class and the world of work. Students need to learn about economic realities while still in school.

The research results clearly show that girls are not well informed about what technology education classes are available before they have to choose electives. Because they have less experience with technology outside of school and they must fight gender stereotypes, girls need encouragement from teachers and guidance counselors and more detailed information about what is available.

A coordinated strategy could include:

Scheduling Changes

Efforts should be made to maximize the number of girls in technology education classes. The current random distribution of girls in technology education classes could be examined in order to schedule as many girls as possible in one class. Once numbers reach 3 or 4 girls in a class, other girls may feel more comfortable taking technology education.

Better Information For Students About What Is Available In High School

- *Middle schools/guidance counselors should schedule visits to high school technology education labs to see the kind of work being done with participation by high school girls who are currently taking these classes (using "pathbreakers" as role models).*

- *Schools should hold elective fairs with participation of high school teachers and students (particularly girls) to inform middle school students about the kind of programs which will be available to them.*

- *Schools should sponsor product shows which display the kind of projects students can create in technology education classes.*

Role Models For Girls In Technology Education

In both middle school and high school, girls need to meet and talk to successful women who work in technological fields.

- *Technology education teachers should arrange for successful women in non-traditional fields to visit their classes and talk about their jobs and the kind of preparation and training they needed.*

- *Careers days or programs presented by schools must be designed to include women in nontraditional occupations.*

- *High Schools should provide more opportunities for high school students to participate in job shadowing or work experience. Programs with local employers in technological fields could be designed to allow girls to meet successful women and learn more about technological careers.*

- *Schools should make a greater effort to hire female technology education teachers or develop team teaching programs with female teachers in math or science.*

Strategies For Teachers

Technology education teachers need to meet together and discuss strategies to attract more girls to their classes. These strategies could include curriculum revisions or reorganization of labs. Teachers may need to attend training sessions or obtain new materials.

- *Technology education teachers should provide more information to students about careers in technological fields and help them make the connection between what they do in class and the world of work. Materials which highlight the contribution of women in technological fields, must be incorporated into the curriculum.*

- *Teachers in the social sciences need to teach students about economic realities, particularly about the role of women in the work force. Students need to learn about the economic consequences of choosing careers and the relative salary and promotion prospects of different occupations. Programs should be developed in cooperation with guidance counselors.*

- *Technology education teachers should try to make their classrooms more attractive and welcoming to girls. Pictures showing women working in technological jobs and products made by female students could be displayed in the classroom. Teachers should consider a forum where girls taking technology education could talk to prospective students considering what electives to choose. Support groups for girls in technology education should be organized.*

Strategies For Guidance Counselors

Guidance Counselors must provide more information to students about what electives are available and how they might fit in with various career options. Girls need to be encouraged to consider taking technology education, particularly if they are not sure whether to go to college, or express interest in engineering or a technological career.

- *Guidance counselors should meet with technology education teachers to learn more about what is available in their classes.*

- *Guidance counselors should organize programs for students who do not plan to go to college to give them a chance to explore different options and obtain more information about further education and training. These programs should include information about nontraditional careers for women and/or the participation of women as role models. They could also include the participation of parents and/or relatives.*